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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/554,037

11/17/2005

Josuke Nakata

F-8866

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EXAMINER

RAMADAN, RAMY O

ART UNIT

PAPER NUMBER

2838

MAIL DATE

DELIVERY MODE

06/28/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/554,037

Applicant(s)

NAKATA, JOSUKE

Examiner

Ramy Ramadan

Art Unit

2838

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> | 6) <input type="checkbox"/> Other: _____ |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :10/20/2005, 10/12/2006, 01/04/2007.

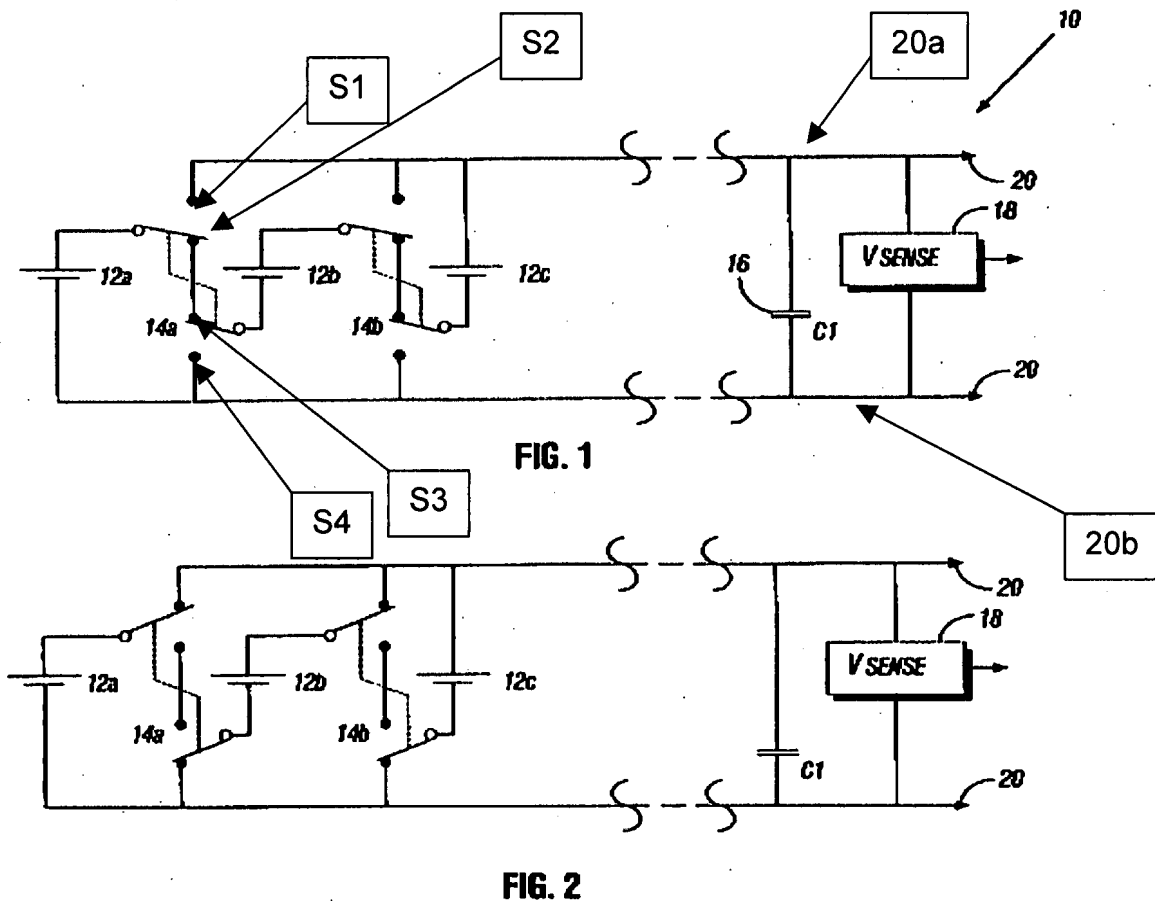
DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-6 and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morrow (US 6,624,535), in view of Yamawaki (US 6,268,559).



As per claims 1, 4 and 9, Morrow discloses and shows in Fig. 1, a power supply 10 (power generator) comprising a plurality of voltage sources (12a, 12b, 12c) (power generating modules) that can be batteries or solar modules, wherein it is implicit for batteries and solar modules to have a plurality of cells (Col. 1, lines 51-58). Morrow shows (Fig.1) that each of the voltage sources is connected in parallel with an electric storage means, which is the capacitor (C1). Morrow discloses and shows (Fig.1 and Fig. 2) positive/negative terminals (buses) (20a, 20b), a plurality of switching means (14a, 14b) comprising first switch means (S1) for connecting/disconnecting each of positive electrodes of the plurality of voltage sources to/from the positive bus (20a), a plurality of second switch means (S2 and S3) for connecting/disconnecting each of the positive electrodes of the plurality of voltage sources to/from a negative electrode of the voltage source adjacent to the one side, for example, in Fig. 1, switch means (S2 and S3) are on so they connect the positive electrode of the voltage source (12a) to the negative electrode of the voltage source (12b), and the opposite is shown in Fig. 2 (Col. 1, lines 52-67). Morrow further shows in Fig. 1 and Fig. 2, a plurality of third switch means (S4) for connecting/disconnecting each of negative electrodes of the voltage sources to/from the negative bus (20b), as shown in Fig. 2, the negative electrodes of voltage sources (12b and 12c) are connected to the negative bus and the opposite is shown in Fig. 1 (Col. 1, lines 52-67).

Morrow fails to explicitly disclose that the positive and negative terminals are connected to an inverter for converting DC power generated by the power supply in to AC power, where said inverter comprises a plurality of semiconductor devices.

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However, Yamawaki discloses a photovoltaic generation system comprising an inverter unit (13), although Yamawaki did not explain the structure of the inverter, it is well known for inverters to use semiconductor switches to convert DC power to ~~DC~~ **AC** power (Col. 7, lines 45-53).

Yamawaki is evidence that ordinary workers in the art would find a reason, suggestion or motivation to use an inverter in a photovoltaic power generation system as disclosed by Morrow, as it is well known to use an inverter with photovoltaic power generation systems to convert DC power to AC power to be used by various types of loads (Col. 7, lines 45-53).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention was made to use an inverter in a photovoltaic power generation system as disclosed by Morrow, as it is well known to use an inverter with photovoltaic power generation systems to convert DC power to AC power to be used by various types of loads (Col. 7, lines 45-53).

As per claims 2 and 3, Morrow discloses and shows in Fig. 1, Fig. 2 and Fig. 3, that the switches (S1-S4) can be double pole double throw or transistor switches (semiconductor switches) (Col. 2, lines 1-0) and he discloses that a controller (22) connected to the switches to control the switches to connect the voltage sources in different arrangements such as in a parallel connection (Fig. 2) or in a series connection (Fig. 1) to create the desired voltage output (Abstract, Col. 2, lines 31-65).

As per claim 5, Morrow discloses and shows in Fig. 1 and Fig. 3, a voltage sensor (18) that detects the desired output voltage across the output terminals (20) and

provide an output signal to the controller, wherein the controller controls the switches based on the voltage represented by the output signal of the voltage sensor (Col. 2, lines 1-64).

As per claim 6, Morrow teaches (Col. 1, lines 51-58) and shows in Fig. 1, that the voltage sources can be solar modules made of solar cells, connected in a series-parallel connection, while it is known for solar modules to have cells aligned in a matrix with plurality of rows and columns (for evidentiary support, see Yamawaki (Col. 1, lines 5-27)).

As per claim 10, Morrow discloses the claimed invention except for the electric storage means being a secondary battery, however he discloses a capacitor instead. It was known that a capacitor could be regarded as a power supply analogous to a secondary battery. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Morrow's device and include a secondary battery in place of a capacitor, since they are both equivalent and perform the identical function specified in the claim in substantially the same way, and produces substantially the same results. **Kemco Sales, Inc. v. Control Papers Co., 208 F.3d 1352, 54 USPQ2d 1308 (Fed. Cir. 2000).**

2. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morrow, in view of Yamawaki, further in view of Mitsuhiro et al. (US 6,281,427), hereinafter Mitsuhiro.

Morrow when modified by Yamawaki, discloses the claimed invention except for the solar cells being made of granular semiconductor materials with a pn junction.

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However, Mitsuhiro teaches the use of solar cells made of granular crystals with a pn junction surface (Col. 4, lines 39-53).

Mitsuhiro is evidence that ordinary workers in the art would find a reason, suggestion or motivation to use solar cells being made of granular semiconductor materials with a pn junction in the apparatus as disclosed by Morrow when modified by Yamawaki to improve the conversion efficiency of the solar cells (Col. 4, lines 39-53).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention was made to use solar cells being made of granular semiconductor materials with a pn junction in the apparatus as disclosed by Morrow when modified by Yamawaki to improve the conversion efficiency of the solar cells (Col. 4, lines 39-53).

3. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morrow, in view of Yamawaki, further in view of Yang (US 5,455,884).

Morrow when modified by Yamawaki, discloses the claimed invention except for the voltage sources being made of a fuel cells each comprising a plurality of single cells.

However, Yang discloses and shows in Fig. 2, a similar device in operation, which is a multiple output stepped compound voltage supply, wherein he teaches that batteries U1-U6 can be solar batteries or fuel powered batteries (Col. 3, lines 15-43).

Yang is evidence that ordinary workers in the art would find a reason, suggestion or motivation to use fuel powered batteries which are known to be made of multiple cells as voltage sources in the device as disclosed by Morrow when modified by Yamawaki to provide a renewable and clean source of power (Col. 3, lines 15-43).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention was made to use fuel powered batteries which are known to be made of multiple cells as voltage sources in the device as disclosed by Morrow when modified by Yamawaki to provide a renewable and clean source of power (Col. 3, lines 15-43).

Conclusion

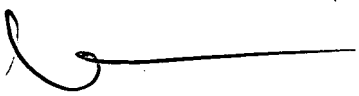
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramy Ramadan whose telephone number is (571) 272-9761. The examiner can normally be reached on Mon-Fri 7:30 am-5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Karl Easthom can be reached on (571) 272-1989. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RR

Ramy Ramadan
Examiner
Art Unit 2838



KARL EASTHOM
SUPERVISORY PATENT EXAMINER